THE BEST BOND
ULTRASONIC WELDING
Shorter cycle times, greater process stability and better quality – welding with ultrasound has revolutionised modern production processes. The precise and reliable joining technology is a powerful innovation driver in many industry sectors. Customers can now choose from innovative combinations of materials. And uninterrupted welded joints have proven successful in continuous operation.

Even when working with large batch sizes, welding with ultrasound ensures connections that comply with the very highest quality requirements. Our welding technologies are fit for Industry 4.0 and can be ideally integrated in automated production lines.

For industry and plant manufacturers, we are the development partner with in-depth ultrasound expertise. As a technology leader from Germany we set new standards when it comes to welding, cutting and cleaning with ultrasound. Thanks to our intensive research we are expanding the range of applications for ultrasound and thereby preparing the ground for innovative manufacturing processes and new technological processes.

Weber Ultrasonics offers technology and service from a single source: with certified quality, developed and manufactured in state-of-the-art production facilities in Germany. The company’s portfolio comprises ultrasonic components such as generators or sonotrodes, as well as complete, turnkey systems with integrated quality control and individual additional functions. Concise customer training courses and a unique customer service with ultra-fast spare part delivery round off the portfolio.

WE DRIVE INNOVATION
As ultrasound specialists, we think in terms of holistic production processes. For example, we develop customer-specific units with integrated quality control with the modular SAPHIR welding system at their heart. These allow customers from a broad range of industry sectors to optimise their production processes efficiently while also ensuring high flexibility.

At PLAYMOBIL®, for example, the headpieces of the globally popular toy figures from the 1.2.3. series for infants are welded so that they are inseparable from the heads using a SAPHIR welding system from Weber Ultrasonics. Meanwhile, indexed workpiece holders ensure that the welding parameters are met without the need to perform readjustments. When new headpieces are added to the range, a new workpiece holder simply needs to be designed before mass production can commence. Tension and height measurements integrated into the welding station aid quality control.

Finally, an ultrasonic sonotrode marks each workpiece for the purpose of quality documentation.

We have also developed a flexible solution with integrated quality control for Gbr. Schwarz GmbH. The manufacturer of display covers for electronic devices embeds metallic threaded bushings in thermoplastic polymer using ultrasound. In the welding station the threaded bushings are positioned in the intended recesses before a sonotrode moves over them and embeds them. All processing parameters and a photo of the finished workpiece are gathered and saved for documentation purposes. The welding station is freely programmable so that the changeover to new display covers can be achieved with a minimum of effort.

Continuous welding of web materials at more than 400 m per minute is a reality in many applications thanks to ultrasonic solutions from Weber Ultrasonics. But speed is not everything. Thanks to the highest level of process reliability and compatibility with Industry 4.0, customer-oriented solutions are created that are perfectly integrated in highly automated production processes.

The welding, laminating, cutting and embossing of non-woven and web materials with ultrasound offers numerous advantages compared to thermal solutions or adhesive processes. Ultrasound is more reliable, productive, cost-effective and safe. Continuous welding with ultrasound is the procedure of choice in many industries: for hygiene products such as nappies or panty liners, medical products including masks or sterile packaging, for air and fluid filters, roof underlays or disposable gloves.

Continuous welding with ultrasound guarantees soft and flexible surfaces as no radiant heat that causes hardening occurs during welding. The energy is used precisely and in a targeted manner so that web materials do not become warped. Cross seams required for hygiene products are implemented perfectly thanks to this precision. What’s more, temperatures remain low despite long process times. Unlike thermal procedures in which the tools are permanently heated, there is no risk of fire.

There is no need for adhesives when using ultrasound. This raises the added value of products, as some adhesive ingredients can trigger allergies. People sensitive to these therefore prefer to use adhesive-free hygiene products. Moreover, when ultrasound is used, no adhesive residues build up on rollers and pulleys in production. The process is cleaner and more environmentally friendly. Compared to thermal procedures, energy consumption is minimal and the purity of the materials makes recycling easy.
IMPRESSIVELY VERSATILE: THE SAPHIR SYSTEM
THE MODULAR WELDING SYSTEM AS A SINGLE COMPONENT

Our special strength is our engineering competence, something we demonstrate by designing individual systems developed together with you specially for your industry and requirements. Our flexible machine concept with high-quality ultrasound and mechanical components makes it possible to implement even the most demanding applications perfectly.

You will receive a turnkey system manufactured in line with the DIN ISO 9001 guidelines with sound-proofing, enclosures, rotary indexing plates and all desired additional functions, such as a quality check or the option to perform different welding processes in succession.

Today, components made of thermoplastics and meshes are used in virtually all industry sectors, from the automobile industry through electrical and hygiene products, all the way up to the medical, textile and packaging industries. State-of-the-art ultrasonic welding systems not only guarantee top cost-effectiveness and reliability, but also stand out thanks to their high flexibility in customer-specific applications.

The innovative SAPHIR SYSTEM from Weber Ultrasonics sets new standards here. Manufactured and pre-configured specially for you, it is available as a manual workstation, an individual combination of components or a custom solution perfectly tailored to your requirements.

As well as functioning as an independent welding unit, the SAPHIR system particularly excels in a network with other devices. This allows machine concepts with up to 25 different functions to be set up - ranging from the actual welding procedure, visual and mechanical checks, right through to sorting processes. There are therefore virtually no limits to your engineering ideas!

1. TOUCH PC
The 15" touch-sensitive control module is equipped with SAPHIR CONTROL 4.0, a comprehensive and intuitive software solution for Windows, and offers full control and monitoring of all important functions of the SAPHIR system at all times. This is where you define the optimal parameters for your processes.

2. GENERATOR
The heart of the SAPHIR system is the digital generator with a power output of up to 5000 watts. This is available in three standard frequencies of 20 kHz, 30 kHz and 35 kHz. The device works reliably in ambient temperatures of -10 to +40 °C and can be integrated into your system with a minimum of effort thanks to its compact design.

3. FEED UNIT AND SONOTRODE
The compact and robust design of the feed unit makes it easy to integrate into every automation process. It is individually matched to welding sonotrodes for 20 kHz, 30 kHz and 35 kHz and is also available in a more compact version. Furthermore, the customer-specific development of the sonotrodes using the finite element method and high-quality materials means that even the toughest functional and quality requirements are met.

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The space-saving plug-and-play all-rounder is already preconfigured and ready for use. It offers a multitude of possible applications and configurations. It can be operated as a partially automated process or as an independent single workplace and is equipped with quality components from Weber Ultrasonics.

The revolutionary SAPHIR modular welding system: digital, networked, intelligent

THE SAPHIR SYSTEM AS A MANUAL WORKSTATION

PLUG & PLAY

The space-saving plug-and-play all-rounder is already preconfigured and ready for use. It offers a multitude of possible applications and configurations. It can be operated as a partially automated process or as an independent single workplace and is equipped with quality components from Weber Ultrasonics.

EASE OF USE
Control and monitor all important functions and parameters via the touch PC with the intuitive SAPHIR CONTROL 4.0 software and a graphical process display.

PLAYING IT SAFE
Interfaces such as Ethernet, PROFINET and PROFIBUS enable remote maintenance, data export and automatic backups.

PROGRAM STORAGE
The SAPHIR system allows you to save up to 200 welding programs.

DURABLE AND ROBUST
All components from Weber Ultrasonics impress thanks to their ease of maintenance and intelligent product design.

MAXIMUM FLEXIBILITY
Take care of a wide range of welding and handling tasks using a single unit. The intelligent changeover system ensures fast product and tool changeovers.

VERSATILE IN ALL VARIANTS
Use the SAPHIR system as a space-saving stand-alone device by integrating single components or as an individual unit specially tailored to your requirements.

DIGITAL POWERHOUSE
5000 watts of power output give you lots of leeway when using your SAPHIR machine:
Power outputs and frequencies:
35 kHz: 400 to 1200 watts
30 kHz: 400 to 1500 watts
20 kHz: 400 to 5000 watts

POTENTIAL FOR MORE
Whatever you are planning for the future, the SAPHIR system grows with your requirements.
Setting the pace for your individual welding solution: pioneering ultrasonic systems. For uncompromising quality and unbridled productivity.

Available in the two most common frequencies – 20 kHz and 35 kHz – and with a maximum power output of up to 5000 watts, the SAPHIR generator is a real powerhouse. Yet it is also easy to store thanks to its compact design.

**TECHNOLOGIES, FUNCTIONS, ADVANTAGES**

- High power output of up to 5000 watts
- SonoScan
- Digital frequency generation and control through 32-bit microcontroller
- Electronic amplitude control from 50 % to 100 %
- Control and monitoring of all functions via Windows touch PC
- Programmable operating parameters for up to 99 individual welding processes
- Tool recognition with automatic program selection
- Monitoring of parameters and the number of welding processes
- Fan control
- Temperature management
- Protection against short-circuit, no-load operation and overload
- RS-232 and RS-485 interface
- USB service interface
- Ethernet interface via touch PC
- Optional PROFINET interface

**MAINS CONNECTION**

- Mains:
  - 230 V: open cable ends or country-specific connectors; in Germany Schuko plugs
  - 400 V: IEC 60309 Cakon

- Device:
  - Permanent wiring

**WEIGHT AND DIMENSIONS**

- Weight: 12 kg
- H x W x D: 235 x 270 x 440 mm

**FREQUENCIES, POWER OUTPUTS AND INPUT VOLTAGES**

<table>
<thead>
<tr>
<th>SAPHIR</th>
<th>400 W</th>
<th>600 W</th>
<th>800 W</th>
<th>1000 W</th>
<th>1200 W</th>
<th>1500 W</th>
<th>2000 W</th>
<th>4000 W</th>
<th>5000 W</th>
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</thead>
<tbody>
<tr>
<td>20 kHz</td>
<td>230 V</td>
<td>230 V</td>
<td>230 V</td>
<td>230 V</td>
<td>230 V</td>
<td>230 V</td>
<td>230 V</td>
<td>400 V</td>
<td>400 V</td>
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</table>
The powerful Sonic Digital HS2 welding generators are the first-choice generators for industrial installations. Flexible installation, easy integration into control processes, high efficiency and compatibility with other system components make the generators an attractive option for large systems.

**Sonic Digital HS2 and Sonic Digital HS2 4000**

**Welding Generators**

The HS2 generators are welding specialists equipped with five welding modes (Weld by Remote, Weld by Time, Weld by Energy, Weld by Peak Power, Weld by Pulse) and up to 99 individual welding processes, which realise every welding procedure with aplomb.

**Technologies, Functions, Advantages**
- Sonic Digital technology as a DIN rail-compatible system variant that can be integrated into existing installations
- High power output of up to 2000 watts (HS2)
- High power output of up to 4000 watts (HS2 4000)
- SonoScan
- Digital frequency generation and control through 32-bit microcontroller
- Electronic amplitude control from 50 % to 100 %
- Programmable operating parameters for up to 99 individual welding processes

- Monitoring of parameters and the number of welding processes
- Fan control
- Temperature management
- Protection against short-circuit, no-load operation and overload
- 15-pole I/O interface
- 2 x 9-pole I/O interface
- Optional setting and control via the Sonic Digital hand-held control unit or the Sonic Digital front control panel
- Optional RS-485 interface
- Optional PROFINET interface

**Main Connection**
- HS2 mains connection
  - 115 V / 230 V: open cable ends or country-specific connectors
  - in Germany: Schuko plugs

- HS device
  - 115 V / 230 V: Phoenix

**Weight and Dimensions**
- HS2
  - Weight: 4 kg
  - H x W x D: 385 x 169 x 89 mm

- HS2 4000
  - Weight: 8 kg
  - H x W x D: 450 x 163 x 182.5 mm

**Frequencies, Power Outputs and Input Voltages**

<table>
<thead>
<tr>
<th>Sonic Digital: HS2</th>
<th>600 W</th>
<th>800 W</th>
<th>1000 W</th>
<th>1500 W</th>
<th>2000 W</th>
<th>4000 W</th>
</tr>
</thead>
</table>

The scan function automatically determines the resonant frequencies of the connected transducer systems and the optimum starting frequency. Moreover, PROFINET or PROFIBUS interfaces facilitate easy integration into control processes and remote maintenance.
SONIC DIGITAL MG BASIC
MODULAR WELDING GENERATOR

The Sonic Digital MG Basic module generator offers you the proven technology from the Sonic Digital line featuring a wide range of applications with 20 to 40 kHz and 400 to 2000 watts and is ideally suited for use with other devices in machine networks.

TECHNOLOGIES, FUNCTIONS, ADVANTAGES
- Modular Sonic Digital technology
- Operation on the device and the display (Premium version)
- SonicScan
- Digital frequency generation and control through 32-bit microcontroller
- Electronic amplitude control from 50 % to 100 %
- Programmable operating parameters for up to 99 individual welding processes
- Monitoring of parameters and the number of welding processes
- Fan control
- Temperature management
- Protection against short-circuit, no-load operation and overload
- 15-pole I/O interface (TTE28 housing for up to 2 modules)
- 2 x 15 pole I/O interface (TTE84 housing for up to 6 modules)
- Optional setting and control via the Sonic Digital hand-held control unit or the Sonic Digital front control panel
- Optional RS-485 interface
- Programmable operating parameters for up to 99 individual welding processes
- Monitoring of parameters and the number of welding processes

WEIGHT AND DIMENSIONS

Sonic Digital MG module
- Weight: 5 kg
- H x W x D: 174 x 71.5 x 308 mm

Module in TTE28 housing
- Weight: 6 kg
- H x W x D: 235 x 205 x 400 mm

Module in TTE84 housing
- Weight: 7.5 kg
- H x W x D: 235 x 530 x 400 mm

MAIN CONNECTION
Mains
- TTE28 housing for up to 2 modules, 230 V: open cable ends or country-specific connectors; in Germany Schuko plugs
- TTE84 housing for up to 6 modules, 400 V: IEC 60309 CeKon

Device
- Permanent wiring

FREQUENCIES, POWER OUTPUTS AND INPUT VOLTAGES

<table>
<thead>
<tr>
<th>FREQUENCIES</th>
<th>400 W</th>
<th>600 W</th>
<th>1000 W</th>
<th>1200 W</th>
<th>1500 W</th>
<th>2000 W</th>
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<tbody>
<tr>
<td>20 kHz</td>
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<td>30 kHz</td>
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<td>250/400 V</td>
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<tr>
<td>35 kHz</td>
<td>250/400 V</td>
<td>250/400 V</td>
<td>250/400 V</td>
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<tr>
<td>40 kHz</td>
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SONIC DIGITAL MG PREMIUM
MODULAR WELDING GENERATOR

It is even easier to control the Premium variant of the Sonic Digital MC as you can make all settings directly on the device and view current system processes and notifications on the display.

WEBER ULTRASONICS | 2.0 WELDING GENERATORS

WEBER ULTRASONICS | 2.0 WELDING GENERATORS

Up to six modules in a single TTE84 housing
SONIC DIGITAL ULC
WELDING GENERATOR

Mains:
- Open cable ends or country-specific connectors; in Germany Schuko plugs

Device:
- IEC 60320 appliance socket C1

TECHNOLOGIES, FUNCTIONS, ADVANTAGES
- Sonic Digital technology as a stand-alone/tabletop unit
- Operation on the device and the display (Premium version)
- SonoScan
- Digital frequency generation and control through 32-bit microcontroller
- Electronic amplitude control from 50 % to 100 %
- Programmable operating parameters for up to 99 individual welding processes
- Monitoring of parameters and the number of welding processes
- Fan control
- Temperature management
- Protection against short-circuit, no-load operation and overload
- 15-pole I/O interface
- Optional: setting and control via the Sonic Digital hand-held control unit
- Optional: RS-485 interface

WEIGHT AND DIMENSIONS
- Weight: 2.8 kg
- H x W x D: 75 x 250 x 180 mm

PREMIUM

The Sonic Digital ULC Premium offers you the technology of the market leader. The particularly economical tabletop unit is ideal for use with a hand-held welding unit and comes with SonoScan and digital frequency generation.

FREQUENCIES, POWER OUTPUTS AND INPUT VOLTAGES

As a tabletop unit, the Sonic Digital LC Basic is particularly compact and ideal for use in combination with a hand-held welding unit. To this end, it can cover a wide range of applications with 20 to 40 kHz and 200 to 2000 watts.

TECHNOLOGIES, FUNCTIONS, ADVANTAGES
- Sonic Digital technology as a stand-alone/tabletop unit
- Operation on the device and the display (Premium version)
- SonoScan
- Digital frequency generation and control through 32-bit microcontroller
- Electronic amplitude control from 50 % to 100 %
- Programmable operating parameters for up to 99 individual welding processes
- Monitoring of parameters and the number of welding processes
- Fan control
- Temperature management
- Protection against short-circuit, no-load operation and overload
- 15-pole I/O interface
- Optional: setting and control via the Sonic Digital hand-held control unit
- Optional: RS-485 interface

WEIGHT AND DIMENSIONS
- Weight: 5.5 kg
- H x W x D: 130 x 250 x 270 mm

SONIC DIGITAL LC
WELDING GENERATOR

Mains:
- Open cable ends or country-specific connectors; in Germany Schuko plugs

Device:
- IEC 60320 appliance socket C13

WEIGHT AND DIMENSIONS
- Weight: 2.8 kg
- H x W x D: 75 x 250 x 180 mm
SONIC DIGITAL FRONT CONTROL PANEL
FOR CONTROL CABINETS AND ENCLOSURES

The practical front control panel for Basic generators can, for example, be fitted in the door of a control cabinet. All settings can be made directly here and the current operating parameters viewed.

TECHNOLOGIES, FUNCTIONS, ADVANTAGES
- The interface converter is preconfigured for the specific generator and system
- Conversion to PROFINET is also possible on request
- DIN rail installation
- With LED status display
- Supplied with device description file

FOR BASIC GENERATORS
The practical hand-held control unit for all generators without display allows all settings to be made and the current operating parameters to be viewed. Suitable for all Basic generators in the Sonic Digital range and HS2.

HSM HAND-HELD WELDING MODULE

THE HSM HAND-HELD WELDING MODULE IS SUITABLE FOR AGILE WELDING APPLICATIONS IN TIGHT SPACES.
for small series or prototypes. The ergonomically designed tool is splash-proof and excels through its durability. You always receive the HSM individually configured with the welding sonotrode manufactured specifically for your application.

TECHNOLOGIES, FUNCTIONS, ADVANTAGES
- Operating modes: time, power output, energy
- Hand-held module is available in gun or rod form
- Optional: lighting and/or plug-in control and HF feed as well as converter and sonotrode cooling

COMPATIBILITY
- All generators in the Sonic Digital range

FREQUENCIES AND POWER OUTPUTS
<table>
<thead>
<tr>
<th>HSM HAND-HELD WELDING MODULE</th>
<th>300 W</th>
<th>400 W</th>
<th>600 W</th>
<th>800 W</th>
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<tbody>
<tr>
<td>35 kHz</td>
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<td>55 kHz</td>
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</table>

WEBER ULTRASONICS
| 4.0 HAND-HELD MODULES |

WEBER ULTRASONICS
| 3.0 OPERATION AND INTERFACES |
CONVERTERS

We offer you converters for all standard frequencies (20 to 40 kHz) and power classes (200 to 5000 watts). Their titanium-aluminium alloy finish makes them particularly durable. Available in planar form together with a matching booster or in a fixed-mounted version for direct connection of the sonotrodes.

<table>
<thead>
<tr>
<th>Technologies, Functions, Advantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>- High power output of up to 5000 watts</td>
</tr>
<tr>
<td>- Made of titanium</td>
</tr>
</tbody>
</table>

Boosters or amplitude transformation units serve as a bridge between the converter and sonotrode, transferring the oscillations and allowing the operating frequency to be precisely adapted to a very wide range of applications.

<table>
<thead>
<tr>
<th>Technologies, Functions, Advantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Made of titanium</td>
</tr>
<tr>
<td>- Equipped with mounting bracket for the transducer system</td>
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</table>

**FREQUENCIES AND POWER OUTPUTS**

<table>
<thead>
<tr>
<th>Converters</th>
<th>200 W</th>
<th>400 W</th>
<th>600 W</th>
<th>800 W</th>
<th>1000 W</th>
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<th>1500 W</th>
<th>2000 W</th>
<th>3000 W</th>
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</table>

**SONOTRODES**

Welding sonotrodes are always developed according to customer- and product-specific requirements using the finite element method. High-grade materials such as aluminium alloy, titanium or sintered steel are used in their production.

<table>
<thead>
<tr>
<th>Frequencies</th>
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</thead>
<tbody>
<tr>
<td>- 20 kHz</td>
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<tr>
<td>- 25 kHz</td>
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<tr>
<td>- 40 kHz</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Technologies, Functions, Advantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Designed using the finite element method</td>
</tr>
<tr>
<td>- Manufactured from a high-strength aluminium alloy, titanium or sintered steel</td>
</tr>
</tbody>
</table>

**FREQUENCIES**

- 20 kHz
- 25 kHz
- 30 kHz
- 35 kHz
- 40 kHz

**TECHNOLOGIES, FUNCTIONS, ADVANTAGES**

- High power output of up to 5000 watts
- Made of titanium

We offer you converters for all standard frequencies (20 to 40 kHz) and power classes (200 to 5000 watts). Their titanium-aluminium alloy finish makes them particularly durable. Available in planar form together with a matching booster or in a fixed-mounted version for direct connection of the sonotrodes.

**FREQUENCIES AND POWER OUTPUTS**

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</table>

**TECHNOLOGIES, FUNCTIONS, ADVANTAGES**

- High power output of up to 5000 watts
- Made of titanium

We offer you converters for all standard frequencies (20 to 40 kHz) and power classes (200 to 5000 watts). Their titanium-aluminium alloy finish makes them particularly durable. Available in planar form together with a matching booster or in a fixed-mounted version for direct connection of the sonotrodes.

**FREQUENCIES AND POWER OUTPUTS**

<table>
<thead>
<tr>
<th>Converters</th>
<th>200 W</th>
<th>400 W</th>
<th>600 W</th>
<th>800 W</th>
<th>1000 W</th>
<th>1200 W</th>
<th>1500 W</th>
<th>2000 W</th>
<th>3000 W</th>
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<tbody>
<tr>
<td>20 kHz</td>
<td>x</td>
<td>x</td>
<td>x</td>
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**TECHNOLOGIES, FUNCTIONS, ADVANTAGES**

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**TECHNOLOGIES, FUNCTIONS, ADVANTAGES**

- High power output of up to 5000 watts
- Made of titanium

To facilitate quick, easy and secure replacement of the entire transducer unit and avoid operator errors, we use indexed positioning mechanisms for our quick-change modules.

**QUICK-CHANGE MODULE**

To facilitate quick, easy and secure replacement of the entire transducer unit and avoid operator errors, we use indexed positioning mechanisms for our quick-change modules.

**WORKPIECE HOLDERS**

To facilitate quick, easy and secure replacement of the entire transducer unit and avoid operator errors, we use indexed positioning mechanisms for our quick-change modules.

**WORKPIECE HOLDERS**

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Weber Ultrasonics is a global player that is deeply rooted in German quality traditions. The company has a flawless track record and has realised over 2000 projects for more than 1500 customers all over the world. In-depth expertise, an intensive development phase, exhaustive testing in the Group’s own application centre, quality-controlled manufacturing in Germany, regional sales offices close to our customers and the very best on-site service guarantee solutions that maximise added value for our customers.
Revolutionise your manufacturing processes with ultrasonic solutions from Weber Ultrasonics. With us, knowledge and action go hand in hand. We know the potential of ultrasonic technology as we successfully push back its boundaries through our own research time and again. And we understand the criteria for success in your industry thanks to our many years of industry expertise. We convert knowledge into success – your success.

Improve your competitiveness with new, more productive manufacturing processes. Discover new dimensions in joining technology and tap lucrative new markets with our pioneering ultrasonic welding systems. Benefit from the in-depth advice of our competent sales staff and look forward to a genuinely successful partnership.

WE KNOW, WE DO

Certified quality
How do you benefit from this?
With top-level technology and service